Transformational leadership development

Connecting psychological and behavioral change

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Abstract

Purpose – This paper aims to investigate whether leaders whose transformational leadership behavior improves after training exhibit different psychological reactions compared to leaders whose leadership behavior does not improve.

Design/methodology/approach – The authors followed 56 leaders taking part in a transformational leadership training program. Questionnaire measures of leaders' self-efficacy, positive affect, perspective taking, and transformational leadership behavior were obtained pre- and post-training.

Findings – Leaders whose self-efficacy, perspective taking and positive affect increased over the training period also reported improvements in their transformational leadership behavior. In addition, leaders whose positive affect increased were more likely to receive improved transformational leadership behavior ratings from their supervisors, team members and peers.

Research limitations/implications – The study supports the proposition, derived from social cognitive theory that change in transformational leadership behavior is related to change in leaders' psychological attributes. Further research is required to establish the direction of this relationship and whether leaders' psychological reactions represent a means through which the effectiveness of leadership interventions can be improved.

Practical implications – Leaders' psychological reactions should be monitored and supported during developmental interventions. Effective leadership training interventions are important not only to achieve change in behavior, but to avoid negative psychological outcomes for leaders.

Originality/value – The study is unusual because it explores the relationship between leader attributes and leadership behavior longitudinally, in a training context. The longitudinal analysis, focussing on change in leaders' psychological attributes, allowed us to explain more variance in leaders' reactions to training.

Keywords Self-efficacy, Transformational leadership behaviour, Perspective taking, Positive affect

Paper type Research paper

Annual corporate spending on leadership development has now reached $45 billion (cf. Gomez, 2007). Unfortunately, research suggests that leadership training achieves only modest effects (Burke and Day, 1986; Dvir *et al.*, 2002; Frese *et al.*, 2003; Hazucha *et al.*, 1993) with a sizeable number of leaders actually showing lower ratings of leadership effectiveness after leadership training (Atwater *et al.*, 1995; Hazucha *et al.*, 1993; Kluger and DeNisi, 1996; London and Smither, 1995; Spreitzer and Quinn, 1996).

Thus, there is a need to better understand the processes through which training interventions achieve change in leaders' behavior.

Although researchers have begun identifying contextual factors and leader characteristics that explain variation in leaders' reactions to leadership interventions (Avolio and Hannah, 2008; Eid *et al.*, 2008; Hazucha *et al.*, 1993; Hotho and Dowling, 2010; Smither *et al.*, 2005), this research does not provide insight into the processes through which change is actually achieved. Our study addresses this gap by exploring whether leaders who show improvement in their leadership behavior exhibit different psychological reactions compared to leaders whose leadership behavior does not improve in response to training. This research has the potential to shed light on the psychological mechanisms through which the effectiveness of training interventions may be enhanced, and may reveal previously unrecognized psychological impacts associated with leader development.

Bandura's (1986, 1997, 2001) social cognitive theory provides a framework for understanding the relationship between change in psychological attributes and change in behavior. According to this framework, there is a triadic, bidirectional interaction between personal characteristics, behavior, and the environment. Bandura (2001) argued that sociostructural factors such as training interventions affect behavior largely through their impact on psychological mechanisms of the self-system. From this perspective, psychological changes which correlate with change in leadership behavior may represent levers through which the effects of leadership interventions can be strengthened. However, Bandura (1997) also suggests that changes in leadership behavior will produce social outcomes and self-evaluations that that have a psychological impact on leaders. Thus, there should be a reciprocal relationship between change in leaders' psychological attributes and change in their leadership behavior.

We chose to explore the connection between psychological change and improvements in leadership behavior within the transformational leadership approach. Transformational leaders inspire followers to perform beyond expectations by developing, intellectually stimulating, and inspiring followers to transcend their own self-interests for a higher collective purpose, mission, or vision (Bass, 1985; Howell and Avolio, 1993). Transformational leadership behaviors have been found to have a positive effect on follower well-being (Barling *et al.*, 1996), performance (Barling *et al.*, 1996; Dvir *et al.*, 2002), safety climate (Mullen and Kelloway, 2009), and organizational citizenship behavior (Monninghoff, 2008; Podsakoff *et al.*, 1996; Purvanova *et al.*, 2006), so they are practically important. Furthermore, there is strong evidence that transformational leadership behaviors can be fostered through training (Atwater *et al.*, 1999; Barling *et al.*, 1996; Dvir *et al.*, 2002; Kelloway *et al.*, 2000). For this reason, transformational leadership training offers a good environment within which to explore the connection between change in leaders' psychological attributes and improvements in their leadership behavior.

Below, we present a review of the relevant literature and theoretical foundations for our hypotheses. Special attention is devoted to the social cognitive framework and the relationship between change in personal factors and change in behavior. We then advance the specific hypotheses to be investigated.

Literature review and theoretical foundations
Although efficacy beliefs are central to social cognitive theory, Bandura (1986) suggests that different personal attributes will be important for learning, depending on

the domain of functioning that is being investigated. Below, we draw from both social cognitive theory and transformational leadership theory to identify three psychological attributes that should differentiate between leaders whose transformational leadership behaviors are improved by training and those whose are not.

Self-efficacy

Self-efficacy is particularly important for learning because it influences choice of behavior, direction of effort, and performance (Bandura, 1986; Lent *et al.*, 1987; Schaub and Tokar, 2005). In their review of leadership self-efficacy, Hannah *et al.* (2008) argue that belief in one's capability as a leader will be necessary for effective performance as a leader, given the complex and challenging nature of the leadership role. In the context of transformational leadership, we believe leaders would need high self-efficacy in order to challenge existing ways of doing things, generate confidence in an organizational vision, and behave in a way that is congruent with internal values even when there are strong pressures to do otherwise. Consequently, we identified change in a leader's belief in his or her capability to perform transformational leadership behaviors as a likely predictor of change in transformational leadership behavior.

According to social cognitive theory, the relationship between self-efficacy and performance is reciprocal, such that self-efficacy is also influenced by performance attainments (Bandura, 1997). In the leadership literature, prior leadership experiences have been found to predict leader efficacy (Amit *et al.*, 2009; McCormick *et al.*, 2002) and both leader self-efficacy and transformational leadership behavior have been found to improve through executive coaching (Baron and Morin, 2010; Finn *et al.*, 2007). Thus, we predicted that leaders who showed improvements in their self-efficacy would also show improvements in their transformational leadership behavior. Our first hypothesis was:

> *H1*. The change in leaders' self-efficacy from pre-training to post-training will predict the change in leaders' transformational leadership behavior from pre-training to post-training.

Perspective taking

Perspective taking should also be important for the development of transformational leadership behaviors. Perspective taking involves adopting another person's viewpoint (Parker and Axtell, 2001). In his analysis of leader psychological processes underlying authentic transformational leadership, Sosik (2006) identifies perspective taking as underlying many dimensions of transformational leadership. He argues that perspective taking helps leaders to articulate a vision that appeals to followers, stimulate intellectual engagement among followers, and show that they are considerate of the unique perspectives that his or her followers and associates possess. Consistent with this view, Gregory *et al.* (2011) found that leaders who engaged in more perspective taking toward their subordinates were seen to engage in more transformational leadership behaviors by the same subordinates.

We took this proposition further by arguing that greater use of perspective taking may differentiate those leaders who are successful in developing transformational leadership behaviors. Initially, perspective taking should support leader development by making leaders aware of the need to change their leadership behaviors. Day (2000) argues that 360-degree feedback interventions, which are commonly used to support leadership development, raise awareness of how your leadership behavior is perceived

and which aspects of your leadership style need modifying. However, perspective taking should also inform the choice of new behaviors. In the terminology of social cognitive theory, perspective taking will give the leader a better understanding of the opportunities offered by the social system (Bandura, 1997, p. 6). Furthermore, being tuned into followers' emotions, motives, actions, and concerns should assist the leader to determine whether new concepts and behaviors are achieving the desired outcomes (Sosik, 2006), thereby assisting the leader to make "ongoing corrective adjustments" during the learning process (Bandura, 1986). Thus, we predicted that:

H2. The change in leaders' perspective taking from pre-training to post-training will predict the change in leaders' transformational leadership behavior from pre-training to post-training.

Positive affect
The third psychological attribute we investigated was positive affect. Fredrickson's (1998, 2004) "broaden-and-build" theory suggests that leaders' emotional reactions, in particular, their positive affect, will be critical in supporting and sustaining their developmental efforts. According to this theory, experiencing positive emotions broadens people's thought-action repertoires and enlarges their cognitive focus, stimulating play, exploration and creativity and encouraging people to engage in a wider range of thoughts and behaviors. These immediate effects associated with positive affect eventually build more enduring personal resources through the development of social bonds, self-insight, and knowledge. Thus, those leaders who experience an improvement in their level of positive affect will be more likely to engage cognitively with models of leadership behavior (e.g. in a training setting), experiment with behaviors presented in the model, engage with others, and seek out the resources that they need to support their ongoing development. These initial changes should result in improved relationships and understanding which further strengthen the leader's positive affect.

Consistent with this theory, Spreitzer and Quinn (1996) found that the level of positive affect experienced by participants in a transformational leadership training program was related to quality of the change initiative they implemented during the program. In contrast, leader cynicism about organizational change (Bommer *et al.*, 2004) has been shown to be negatively correlated with transformational leadership behavior. Conversely, leaders who engage in more transformational leadership behaviors are likely to experience more rewarding interactions with others (Li and Hung, 2009) and thus experience more positive affect. We therefore predicted that:

H3. The change in leaders' positive affect from pre-training to post-training will predict the change in leaders' transformational leadership behavior from pre-training to post-training.

Method
Participants
The study participants were middle- and senior-level leaders in an organization who had either been invited (based on their level in the organization) or had submitted an expression of interest to participate in a year-long leadership development program. They were all employees of a public sector organization which specialized in the

provision of scientific services to other government departments. The functions performed by these leaders ranged from laboratory management, to developing practice and capability within a particular disciplinary area, to project management. In all, 83 percent of the leaders who were invited to take part in the program chose to participate, but due to attrition (mostly the result of people leaving the organization) only 80 percent of the leaders who originally signed up actually completed the program. The study data are based on the 56 leaders who completed the program. Of these leaders, 40 were male and 16 were female. They ranged in age from 30 to 59 years, with the mean age being 47 years. Their organizational tenure ranged from one to 18 years, the mean length of tenure being five years.

Procedure

The one-year transformational leadership training program commenced with a two day workshop where leaders learnt about the transformational leadership model, received 360-degree feedback assessing their transformational leadership behavior, and practiced transformational leadership behaviors through experiential activities. After this first workshop, leaders were invited to participate in executive coaching (delivered in six fortnightly sessions) and were allocated funding to attend external training that was relevant to their developmental needs. Three follow-up workshops were also held during the year, where participants came together to focus on specific leadership skills and share their experiences with the program. At the final workshop (held at the end of the year) leaders received a second wave of 360-degree feedback, which allowed them to assess their progress and update their developmental goals. The comprehensive nature of the intervention meant that this program represented an ideal opportunity to investigate the relationship between change in psychological characteristics and change in leader behavior.

The training program was rolled out over two years, with 27 participants completing the program in the first year, and the remaining 29 participants completing the program in the second year. Change in leaders' transformational leadership behavior was assessed from the 360-degree feedback data, which were obtained just prior to the commencement of the program and at the end of the one-year program. The 360-degree feedback questionnaire was completed by the leader's immediate supervisor, at least five of the leader's team members, two or more of the leader's peers, and the leaders themselves. The leader's version of the questionnaire had an extra section which contained the psychological measures and assessed demographic characteristics (age, gender, tenure, and education level). Thus, leaders' psychological characteristics were assessed at roughly the same time as their transformational leadership behavior.

The response rate for the pre-training survey was 100 percent for both leaders and their supervisors, and the response rate for the post-training survey was 100 percent for leaders and 90 percent for their supervisors. The response rate was 85 percent for team members and 84 percent for peers in the pre-training survey, and 75 percent for team members and 84 percent for peers in the post-training survey. To ascertain whether there were any differences between leaders who completed the training program in the first year and leaders who completed the program in the second year, independent groups t-tests were used to compare the groups on the study measures. The t-tests revealed no significant differences between the two groups for either pre-training measures (self-rated transformational leadership, $t = 0.40$; supervisor-rated transformational leadership, $t = -0.16$; team-rated transformational leadership,

$t = 1.24$; peer-rated transformational leadership, $t = 0.80$; self-efficacy, $t = 0.51$; perspective taking, $t = 0.54$; positive affect $t = -0.05$) or post-training measures (self-rated transformational leadership, $t = 0.23$; supervisor-rated transformational leadership, $t = -0.06$; team-rated transformational leadership, $t = 0.73$; peer-rated transformational leadership, $t = 0.16$; self-efficacy, $t = 0.59$; perspective taking, $t = -0.05$; positive affect, $t = 0.95$).

Measures

Transformational leadership behavior. The measure of transformational leadership represented a composite of items from existing measures, chosen to suit the organizational context. A facilitated workshop was carried out with representatives of the organization who were asked to identify those leadership behaviors that made leaders effective in the organization. This information was used to select items and sub-dimensions from existing transformational leadership instruments. The final set of items was derived from House's (1998) charismatic and instrumental leadership measures, Yukl's Managerial Practices Survey (Yukl and Kim, 1998), and Podsakoff *et al.*'s (1990) measures of transformational leadership behavior. All items were rated on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. As the full 360-degree feedback measure consisted of 100 items, we used a factor analysis to identify those items which loaded most strongly on their transformational leadership sub-dimensions. However, in line with other researchers measuring transformational leadership (e.g. Bono and Judge, 2003; Judge *et al.*, 2006; Piccolo and Colquitt, 2006; Schaubroeck *et al.*, 2007; Tracey and Hinkin, 1998; Yammarino and Dubinsky, 1994; Zhu *et al.*, 2009), we treated the final set of items as indicators of a general transformational leadership factor.

Leader self-efficacy. Leader self-efficacy was assessed using a ten-item scale assessing the leader's confidence that he or she could perform transactional and transformational leadership behaviors. The items represented behaviors which varied in their level of difficulty, as self-efficacy beliefs vary in terms of level as well as strength (Bandura, 1982). The Likert scale ranged from 0 = totally uncertain to 10 = totally certain. Two example items are: "In relation to the team you manage, how certain are you that you can treat your team members as individuals, as well as members of a team?" and "In relation to the team you manage, how certain are you that you can get team members to think in new and innovative ways?" Finn *et al.* (2007) employed this measure and reported that it had good internal reliability and discriminant validity.

Leader perspective taking. Perspective taking was measured using Parker and Axtell's (2001) situationally oriented measure of perspective taking. This measure assesses the extent to which the perspective taker empathizes with the target and makes positive attributions about the target's behavior. Evidence shows that perspective taking reliably results in the perspective taker making attributions for others' behavior that are more like those one would make for oneself (e.g. Galper, 1976; Regan and Totten, 1975). An example item is "If my staff fall behind, it's mostly due to the tough circumstances they face." The Likert scale ranged from 1 = strongly disagree to 5 = strongly agree. Analyses conducted after the first wave of data collection revealed that the scale reliability was rather low ($\alpha = 0.68$), so an additional item ("When my staff perform poorly at their task, it's usually not through any fault of their own") was added to the scale for subsequent waves of data collection to provide better coverage of the construct domain. Scale scores were calculated by averaging the leader's responses to the items that he or she completed.

Leader positive affect. Leaders' positive affect was assessed with five indicators of positive affect taken from Hart *et al.*'s (1996) Occupational Positive and Negative Affect Scale. The respondent is instructed to rate how often he or she felt "energized," "enthusiastic," "proud," "happy" and "delighted" over the past month, using a Likert scale ranging from 1 = not at all to 5 = all the time. Griffin (2001) used these positive and negative affect scales in his multi-level study of dispositions and work reactions, and showed that they could be differentiated from dispositional measures of extroversion and neuroticism. Whereas the original scale consisted of seven positive affect items, we used the five most strongly loading items from the original seven-item scale.

Analyses

As this study was concerned with understanding the association between change in leaders' psychological attributes and improvement in leadership behavior, our initial analyses were designed to provide a picture of the changes exhibited by leaders on the study variables. First, we carried out *t*-tests to test whether there was a consistent pattern of change for the leaders in the sample. However, as the aim of this study was to explain variability in leaders' behavior change, we did not necessarily expect to obtain significant results from these analyses. Next, we calculated change scores (subtracting pre-training scores from post-training scores) and examined the distribution of these change scores. In a normal sample, 5 percent of the change scores should be one or more standard errors from the mean. For our sample of 56 leaders, we would only expect to see 1.5 leaders with change scores two standard errors above the mean and 1.5 leaders with change scores two standard errors below the mean. A higher number of leaders above or below the mean would therefore indicate that the amount of change exhibited by leaders was higher than would be expected if the changes observed were merely due to random error.

We then used a hierarchical regression analysis to examine whether change in leaders' behavior could be explained by the change in their psychological attributes. The analysis was carried out in three steps. In the first step, the pre-training measure of transformational leadership behavior was entered as a predictor of post-training transformational leadership behavior. In the second step of the analysis, the pre-training measure of the psychological attribute was entered into the analysis. Finally, we entered the post-training measure of the psychological attribute to investigate whether the unique variance on the post-training psychological measure would explain unique variance in the post-training measure of leader behavior.

This analysis is equivalent to testing the correlation between change in the psychological attribute and change in transformational leadership behavior (Cronbach and Furby, 1970). That is, by partialling out the variance in the post-training measures that can be predicted from the pre-training measures, we can see whether the change (or unique post-training variance) in the psychological measure is associated with the change (or unique post-training variance) in the behavioral measure.

Because our sample size was relatively small we elected to test each psychological attribute in a separate analysis. As the study hypotheses were directional, we used one-tailed significance tests to evaluate the significance of the hypothesized effects. We carried out a power analysis (Cohen, 1988) to check that this approach would provide adequate statistical power to detect a medium size effect, which according to Cohen's convention, we represented as $f^2 = 0.15$. The power analysis revealed that our

sample of 56 leaders gave us power $= 0.90$, or a 90 percent probability of correctly rejecting the null hypothesis if a medium effect was present.

Before aggregating the team member and peer ratings of leader behavior, we tested for within-group agreement and between-group variance. James *et al.*'s (1984) $rwg_{(J)}$ statistic was used to measure within-group agreement; values above 0.70 on this statistic represent acceptable levels of agreement. The mean $rwg_{(J)}$ values for team members', $M_{pre-training} = 0.98$ $(SD_{pre-training} = 0.02)$ and $M_{post-training} = 0.94$ $(SD_{post-training} = 0.14)$ and peers' ratings $M_{pre-training} = 0.97$ $(SD_{pre-training} = 0.07)$ and $M_{post-training} = 0.98$ $(SD_{post-training} = 0.09)$ of transformational leadership behavior demonstrated high within-group agreement. Intraclass correlations (ICC) were also calculated (using mean squares from an ANOVA) to check the proportion of leader-level variance and the reliability of the aggregated data (James, 1982). The ICC(1) values were above the median level reported in the organizational literature (cf. James, 1982), confirming that there was substantial leader-level variance in team and peer ratings of transformational leadership behavior, $ICC(1)_{team\,pre-training} = 0.27$; $ICC(1)_{team\,post-training} = 0.14$; $ICC(1)_{peer\,pre-training} = 0.17$; $ICC(1)_{peer\,post-training} = 0.44$. The $ICC(2)$ values, $ICC(2)_{team\,pre-training} = 0.70$; $ICC(2)_{team\,post-training} = 0.52$; $ICC(2)_{peer\,pre-training} = 0.25$; $ICC(2)_{peer\,post-training} = 0.71$, were not all above the recommended level of 0.6 (Ostroff and Schmitt, 1983) but they represent moderate values for these statistics (cf. Deal and Billings, 1996; Schneider *et al.*, 1998) and overall, these checks supported aggregation of the data.

Results

Correlations among measures

The correlations among the study measures are reported in Table I. There were only a few significant correlations between measures of leaders' demographic characteristics and the study measures, and these were all weak. Self-ratings of transformational leadership behavior did not correlate significantly with others' ratings (supervisors, team members and peers), but there were some significant correlations among the supervisor, team and peer ratings. This difference between self-ratings and others'-ratings of leadership behavior has been reported by other researchers (e.g. Atwater and Brett, 2003; Harris and Schaubroeck, 1998), and illustrates the importance of considering multiple raters in this type of research. Our next analyses were intended to provide more insight into the nature of the changes that occurred.

Change over time

The paired samples *t*-tests (see Table II) provided the first analysis of leaders' reactions to training. There was a significant improvement in supervisor ratings of transformational leadership behavior from pre-training to post-training, $t(55) = 2.05$, $p < 0.05$; however, self-ratings, $t(55) = 0.98$, $p > 0.05$, team ratings, $t(55) = -0.04$, $p > 0.05$, and peer ratings, $t(55) = 0.75$, $p > 0.05$, did not show consistent improvement from pre-training to post-training. Similarly, while there were significant effects for leaders' self-efficacy, $t(55) = 2.34$, $p < 0.05$, and perspective taking, $t(55) = 1.96$, $p < 0.05$, with scores increasing from pre- to post-training, the change in leaders' positive affect was not significant, $t(55) = 1.07$, $p > 0.05$.

A different perspective on leaders' reactions was provided by examining the distribution of leaders' change scores (pre-training scores subtracted from post-training scores). The distributions revealed that some leaders showed substantial decreases over time on the study measures, some showed relatively stable profiles over time, and others

Variable	n	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Demographic measures																					
1. Age	56	47.22	6.66																		
2. Gender	56	1.24	0.43	−0.20*																	
3. Tenure	56	5.33	4.86	0.25*	0.02																
4. Education	56	7.89	1.92	0.10	0.03	−0.01															
Pre-training measures																					
5. Self-rated transformational leadership	56	3.91	0.53	0.08	−0.09	−0.04	0.07	(0.95)													
6. Supervisor-rated transformational leadership	56	3.78	0.62	−0.19	0.11	0.14	0.16	−0.05	(0.97)												
7. Team-rated transformational leadership	56	3.60	0.50	−0.14	0.16	0.01	−0.12	−0.13	0.42***	(0.98)											
8. Peer-rated transformational leadership	56	3.78	0.41	−0.14	0.10	0.11	0.20	−0.21	0.33**	0.17	(0.96)										
9. Self-efficacy	56	6.91	1.19	0.14	−0.14	0.03	−0.21*	0.27*	0.04	0.13	−0.07	(0.92)									
10. Perspective taking	56	3.25	0.63	−0.01	−0.06	−0.13	0.08	0.04	0.06	−0.05	−0.06	0.21	(0.83)								
11. Positive affect	56	3.34	0.53	−0.11	−0.03	0.08	−0.19	0.22*	−0.31**	0.01	0.08	0.42***	−0.01	(0.75)							
Post-training measures																					
12. Self-rated transformational leadership	56	4.05	0.46	0.05	−0.02	0.02	−0.18	0.26*	−0.03	0.05	−0.10	0.31**	0.14	0.09	(0.95)							
13. Supervisor-rated transformational leadership	54	3.88	0.55	−0.14	0.02	0.08	0.13	0.04	0.67***	0.20	0.22*	0.16	0.18	−0.21	0.14	(0.97)						
14. Team-rated transformational leadership	56	3.58	0.49	−0.17	0.01	0.05	0.29*	0.05	0.23*	0.56***	0.10	−0.05	0.12	0.00	0.11	0.16	(0.98)					

(*continued*)

Table I.
Correlations and internal reliabilities for study measures

Variable	n	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15. Peer-rated transformational leadership	55	3.86	0.64	−0.02	0.17	0.10	0.00	−0.20	0.44****	0.63***	0.52****	−0.04	0.09	−0.04	0.02	0.24*	0.29*	(0.99)			
16. Self-efficacy	56	7.25	1.25	0.06	0.08	0.15	−0.22	0.23*	0.15	0.27*	0.02	0.60***	0.24*	0.23*	0.63***	0.29*	0.17	0.16	(0.94)		
17. Perspective taking	56	3.38	0.60	−0.18	0.03	0.03	0.01	0.23*	0.20	0.04	−0.05	0.28*	0.64***	0.04	0.33**	0.18	0.12	0.03	0.38***	(0.79)	
18. Positive affect	56	3.44	0.72	−0.25*	0.11	0.13	−0.01	−0.09	−0.10	0.15	0.16	0.01	−0.03	0.43***	0.25*	0.16	0.27*	0.27*	0.34***	−0.02	(0.88)

Notes: Values in parentheses represent coefficient alphas. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table I.

Measures	Pre-training M (SD)	Post-training M (SD)	t
Self-rated transformational leadership	3.97 (0.53)	4.05 (0.46)	0.98
Supervisor-rated transformational leadership	3.75 (0.62)	3.88 (0.55)	2.05*
Team-rated transformational leadership	3.59 (0.48)	3.58 (0.49)	−0.04
Peer-rated transformational leadership	3.80 (0.41)	3.86 (0.64)	0.75
Self-efficacy	6.91 (1.19)	7.25 (1.25)	2.34*
Perspective taking	3.25 (0.63)	3.38 (0.60)	1.96*
Positive affect	3.34 (0.53)	3.44 (0.72)	1.07

Notes: $n = 56$. * $p < 0.05$

Table II.
Change in psychological attributes and transformational leadership behavior

showed substantial improvement over time. To understand whether this variability was greater than would be expected if changes were merely due to random error, we counted the number of leaders who were more than two standard errors above or below the mean change score (see Table III). This analysis revealed that the change scores on all of the measures were more variable than would be expected if change was random. Furthermore, as would be expected, the mean change scores were all positive, with more leaders exhibiting a high level of improvement rather than a high level of decline. Nevertheless, there remained a relatively high level of variability in the change scores at the negative end of the distribution, suggesting that the training intervention had had a negative impact for some of the participants.

Hierarchical regression analyses
The hierarchical regression analyses were carried out to determine whether changes on the psychological measures could be used to explain differences between leaders in their transformational leadership development. The first analyses were run with self-ratings of post-training transformational leadership as the criterion variable (see Table IV). The key question was whether the post-training psychological measure would explain significant variance in the post-training transformational leadership measure after the variance explained by the pre-training measures had been taken into account.

Measures	n above 2 SEM	n below 2 SEM
Self-rated transformational leadership	13	12
Supervisor-rated transformational leadership	15	4
Team-rated transformational leadership	17	18
Peer-rated transformational leadership	18	11
Self-efficacy	4	5
Perspective taking	5	2
Positive affect	7	5

Note: $n = 56$

Table III.
Number of leaders exhibiting significant improvement or decline

We found a significant improvement in explanatory power for all three analyses, self-efficacy, $\Delta R^2 = 0.29$, $F(1, 52) = 25.93$, $p < 0.001$, perspective taking, $\Delta R^2 = 0.06$, $F(1, 52) = 3.91$, $p < 0.05$, and positive affect, $\Delta R^2 = 0.09$, $F(1, 52) = 5.29$, $p < 0.05$. That is, change on the psychological measures predicted change in self-ratings of transformational leadership behavior.

However, the psychological measures did not have the same explanatory power in the analyses predicting supervisor, team, and peer ratings of post-training transformational leadership behavior. There was a consistent pattern of results across supervisor, team, and peer ratings of transformational leadership behavior (see Tables V-VII). Post-training positive affect explained unique variance in post-training transformational leadership behavior in the analyses for all three groups: supervisors, $\Delta R^2 = 0.06$, $F(1, 50) = 6.37$, $p < 0.01$, team members, $\Delta R^2 = 0.05$, $F(1, 52) = 3.72$, $p < 0.05$, and peers, $\Delta R^2 = 0.06$, $F(1, 51) = 4.52$, $p < 0.05$. However, the post-training measure of leader self-efficacy did not add significant explanatory power in the analyses, $\Delta R^2 = 0.02$, $F(1, 50) = 1.70$, $p > 0.05$ (supervisor ratings), $\Delta R^2 = 0.01$, $F(1, 52) = 0.99$, $p > 0.05$ (team ratings), $\Delta R^2 = 0.04$, $F(1, 51) = 2.52$, $p > 0.05$ (peer ratings). Nor was the post-training measure of perspective taking significant in the analyses, $\Delta R^2 = 0.00$, $F(1, 50) = 0.25$, $p > 0.05$ (supervisor ratings), $\Delta R^2 = 0.00$, $F(1, 52) = 0.00$, $p > 0.05$ (team ratings), $\Delta R^2 = 0.00$, $F(1, 51) = 0.08$, $p > 0.05$ (peer ratings). It is worth noting that the pre-training psychological measures were not significant in these analyses either. In other words, leaders' self-efficacy, perspective

Predictors	Step 1	Step 2	Step 3	ΔR^2
Pre-training transformational leadership	0.26*	0.19	0.15	0.07*
Pre-training self-efficacy	–	0.26*	−0.13	0.06**
Post-training self-efficacy	–	–	0.67***	0.29***
Pre-training transformational leadership	0.26*	0.26*	0.19	0.07*
Pre-training perspective taking	–	0.13	−0.09	0.02
Post-training perspective taking	–	–	0.34*	0.06*
Pre-training transformational leadership	0.26*	0.26*	0.32*	0.07*
Pre-training positive affect	–	0.04	−0.12	0.00
Post-training positive affect	–	–	0.33*	0.09*

Notes: $n = 56$. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table IV.
Standardized β weights from the hierarchical regression predicting self-rated transformational leadership behavior

Predictors	Step 1	Step 2	Step 3	ΔR^2
Pre-training transformational leadership	0.67***	0.67***	0.65***	0.45***
Pre-training self-efficacy	–	0.14	0.04	0.02
Post-training self-efficacy	–	–	0.17	0.02
Pre-training transformational leadership	0.67***	0.66***	0.68***	0.45***
Pre-training perspective taking	–	0.14	0.18	0.02
Post-training perspective taking	–	–	−0.07	0.00
Pre-training transformational leadership	0.67***	0.67***	0.66***	0.45***
Pre-training positive affect	–	0.00	−0.12	0.00
Post-training positive affect	–	–	0.28**	0.06**

Notes: $n = 54$. ** $p < 0.01$; *** $p < 0.001$

Table V.
Standardized β weights from the hierarchical regression predicting supervisor-rated transformational leadership behavior

taking and positive affect at the outset of training were not related to the extent to which their transformational leadership behavior changed over the training period (as rated by supervisors, team members, and peers).

Discussion

This study was informed by Bandura's (1986, 1997, 2001) social cognitive framework, which conceptualizes learning as a triadic reciprocal interaction involving personal, behavioral, and environmental factors. The study is unique in that it illustrates the interplay of personal, behavioral, and environmental factors in a leadership development context. That is, we found that leaders who were participating in a transformational leadership development intervention exhibited both psychological and behavioral reactions, and that these reactions were inter-related, such that leaders who experienced more positive psychological reactions were also more likely to exhibit positive behavioral reactions. Adopting this framework therefore reveals the importance of considering leaders' psychological well-being when attempting to promote change in leader behavior.

We found that change in positive affect was most reliably associated with change in behavior. Two frameworks in the literature explain why positive affect is important for learning. First, as discussed earlier, broaden-and-build theory suggests that positive affect provides resources to support change by broadening one's cognitive focus, stimulating play and exploration, and facilitating social relationships (Fredrickson, 1998). Intentional change theory (Boyatzis and Akrivou, 2006) provides further explanation

Predictors	Step 1	Step 2	Step 3	ΔR^2
Pre-training transformational leadership	0.56***	0.58***	0.55***	0.32***
Pre-training self-efficacy	–	−0.13	−0.21	0.02
Post-training self-efficacy	–	–	0.14	0.01
Pre-training transformational leadership	0.56***	0.57***	0.57***	0.32***
Pre-training perspective taking	–	0.15	0.15	0.02
Post-training perspective taking	–	–	−0.03	0.00
Pre-training transformational leadership	0.56***	0.56***	0.53***	0.32***
Pre-training positive affect	–	−0.01	−0.11	0.00
Post-training positive affect	–	–	0.24*	0.05*

Notes: $n = 56$. * $p < 0.05$; *** $p < 0.001$

Table VI.
Standardized β weights from the hierarchical regression predicting team-rated transformational leadership behavior

Predictors	Step 1	Step 2	Step 3	ΔR^2
Pre-training transformational leadership	0.52***	0.51***	0.50***	0.27***
Pre-training self-efficacy	–	−0.01	−0.15	0.00
Post-training self-efficacy	–	–	0.24	0.04
Pre-training transformational leadership	0.52***	0.52***	0.52***	0.27***
Pre-training perspective taking	–	0.12	0.15	0.01
Post-training perspective taking	–	–	−0.04	0.00
Pre-training transformational leadership	0.52***	0.52***	0.49***	0.27***
Pre-training positive affect	–	−0.08	−0.19	0.01
Post-training positive affect	–	–	0.27*	0.06*

Notes: $n = 55$. * $p < 0.05$; *** $p < 0.001$

Table VII.
Standardized β weights from the hierarchical regression predicting peer-rated transformational leadership behavior

of the role of positive affect in promoting change. According to this theory, positive emotions not only support cognition, exploration and relationship-building, they activate our ideal self – our conception of what we most aspire to be and become. Once the ideal self is activated, it monitors and guides behavior and decisions to ensure that they are consistent with our aspirations and values. It can also provoke a phase change in the person's change or adaptation process, leading to the articulation of a personal vision. Concepts such as the ideal self, a personal vision, and behaving in a manner that is consistent with one's values are all very consistent with the transformational leadership approach. Thus, the processes described in intentional change theory are likely to be highly relevant for explaining change in transformational leadership behavior.

The above analysis focusses on the effect of change in psychological characteristics on behavior, but in the social cognitive framework (Bandura, 1986, 1997, 2001), personal characteristics, behavior and the environment are reciprocally related. The "broaden-and-build" and intentional change frameworks conceptualize positive affect as a driver of change in behavior, but they also suggest that the psychological resources that are built when people are in a positive mood will result in upward spirals that further enhance people's well-being (Boyatzis and Akrivou, 2006; Fredrickson, 2004). Within the realm of transformational leadership, these psychological resources might include having a vision for the future and stronger relationships with team members. Thus, the observed relationship between change in positive affect and change in transformational leadership will reflect the effect of the leader's behavior and environment on his or her positive affect as well as the effect of the leader's affect on his or her behavior and environment.

While our findings for positive affect integrate well with existing theories in the literature, the relatively weak findings for self-efficacy need explanation, given that both social cognitive theory (Bandura, 1986, 1997, 2001) and intentional change theory (Boyatzis and Akrivou, 2006) identify self-efficacy as important for learning and change. The analyses based on self-ratings of transformational leadership behavior were actually consistent with these theories in that change in self-efficacy had a strong effect. Thus, it was only the analyses based on other-ratings of transformational leadership behavior that were not consistent with these theories. Possibly, others take longer to recognize change in leaders' behavior than leaders themselves do, because they have fewer opportunities to observe the leaders' behavior. By obtaining our ratings of leadership behavior at a later point in time, we may have seen stronger effects in the analyses using supervisor, team and peer ratings of leaders' behavior.

Limitations
This study has several strengths, being designed around a strong intervention (a one-year training program utilizing a combination of developmental techniques) and carried out in an organizational setting, with pre- and post-training measures obtained from four different sources. However, the study participants came from one organization and experienced the same training program. The generalizability of our findings therefore depends on the extent to which this organization and this training program are representative of leadership development interventions in other organizations. The training intervention investigated in this study employed what are currently popular elements of leadership development interventions, such as 360-degree feedback, training workshops and executive coaching, but the way in which these elements are presented and delivered, and the environment in which they are delivered, may affect their behavioral and psychological impact. There is therefore a need to establish whether our

findings can be replicated with a larger sample, ideally involving participants from a range of organizations and training programs.

In addition, most of the items from our transformational leadership measure were derived from existing, validated measures. However, to ensure that the measure assessed leadership behaviors that were relevant for the organizational context, we used a combination of items from multiple sources. While this approach ensured that our measure of leadership behavior was practically relevant, the measure was not directly comparable with other measures of transformational leadership behavior in the literature. For this reason also, it would be desirable to test the replicability of our findings.

Finally, although there was consistency in the finding that change in positive affect was related to change in transformational leadership behavior, our other findings varied depending on whether self- or other-ratings were used to assess change in transformational leadership behavior. Two factors may have been responsible for this variation. First, the relationship between the psychological measures and self-ratings of leadership behavior may have been inflated by common method variance effects. However, having controlled for both pre-training measures of psychological attributes and pre-training measures of behavior, the impact of common method variance on our findings would have been reduced. Second, supervisors, peers and team members may take longer to recognize changes in leaders' behavior. By capturing additional follow-up measures of leadership behavior in future research we should be able to clarify the relationship between change in self-efficacy, change in perspective taking, and change in transformational leadership behavior.

Practical implications
This study extends our understanding of the process of leadership development in several ways. First, the study provides new insight into the variability in leaders' reactions to training. Using a novel statistical technique, we found that transformational leadership training is associated with negative effects as well as positive effects. While this finding is consistent with prior research (Atwater *et al.*, 1995; Hazucha *et al.*, 1993; Kluger and DeNisi, 1996; London and Smither, 1995; Spreitzer and Quinn, 1996), our study extends these findings by revealing that these effects encompass leaders' psychological attributes as well as their leadership behavior. While effects of training on leaders' leadership self-efficacy have been reported in the past (Baron and Morin, 2010; Finn *et al.*, 2007; Towler, 2003), we found that leadership training also had an effect on the way in which leaders made attributions about their team members' behavior, and the frequency with which they felt happy and energized a work. These findings highlight the importance of delivering effective leadership interventions, not only so as to ensure that the behavioral goals of the intervention are achieved, but also to avoid negative psychological outcomes for leaders, which may in turn have flow-on effects.

In practice, these findings suggest that leaders' psychological reactions should be supported and monitored during developmental interventions. Both training designers and trainers need to be aware of the possibility that transformational leadership training can have negative psychological impacts for leaders. While we have a responsibility for ensuring that leaders do not experience significant negative effects as a result of participating in leadership training, the finding that these psychological reactions are connected to behavioral outcomes suggests that leaders' psychological reactions may also represent a means through which the effectiveness

of leadership interventions can be improved. For example, by promoting positive affect in the training environment, it may be possible to achieve more positive change in transformational leadership behavior.

Theoretical implications and directions for further research
Our study supports the proposition, derived from social cognitive theory (Bandura, 1986, 1997, 2001), that there is a relationship between change in transformational leadership behavior and change in leaders' psychological attributes. This finding represents an important contribution to transformational leadership research. Although there is growing interest in identifying leader attributes that are associated with transformational leadership behavior (Avolio, 1994; Bono and Judge, 2004; Kuhnert and Lewis, 1987; Mandell and Pherwani, 2003; Richardson and Vandenberg, 2005), our study is one of few which actually explores these relationships longitudinally, in a learning context (Day, 2000). Importantly, we found that the relationship between transformational leadership behaviors and leaders' psychological attributes differed depending on whether we examined the static relationship or the dynamic relationship. Furthermore, the strongest relationships were observed in the analyses which explored change in the measures over time, rather than in the analyses focussing on static correlations among measures. Thus, our findings suggest that more of the variance in leaders' reactions to training can be explained by focussing on dynamic relationships among constructs, rather than the more static and trait-like constructs that are often the focus of leadership research (e.g. Judge *et al.*, 2002; Sosik *et al.*, 2009; van Emmerik *et al.*, 2010).

This line of research offers many exciting directions for further research. For example, while social cognitive theory (Bandura, 1986, 1997, 2001) predicts that the relationship between change in leader attributes and change in behavior will be reciprocal, further empirical research is needed to establish the direction of this relationship. If we can establish that change in positive affect is a precursor of change in transformational leadership, we may be moving toward identifying a pathway through which the effects of leadership interventions can be strengthened. In addition, if change in transformational leadership behavior can be shown to have an impact on leaders' positive affect, then we expand our understanding of the benefits of transformational leadership development.

Second, the social cognitive framework (Bandura, 1986, 1997, 2001) conceptualizes learning as a function of behavior, personal factors, and the environment. In this study, the only environmental factor that was explored was the training program. However, informal feedback from the executive coaches who were working with the leaders suggested that leaders' workloads were important. Some leaders felt that their high workloads prevented them from carrying out their developmental plans and fully embracing the training opportunity. This feedback raises an alternative explanation for our study findings. Leaders who experienced high work overload may have been both less likely to experiment with new behavior, and less likely to experience an increase in positive affect. According to this proposition, the observed association between change in leader behavior and change in the leader's positive affect might reflect the effect of work overload on both variables. Thus, future research in this area should examine whether the relationship between change in positive affect and change in transformational leadership behavior remains after controlling for the effect of work overload.

Finally, we found that change in positive affect is associated with improvements in transformational leadership behavior. Our findings therefore extend the

broaden-and-build theory of affect (Fredrickson, 1998, 2004) by illustrating the importance of positive affect in the realm of leadership development.

Conclusion

This study, informed by social cognitive theory (Bandura, 1986, 1997, 2001), reveals that leaders' reactions to transformational leadership training include psychological as well as behavioral changes. Furthermore, the psychological changes that leaders experience over the period of the training are associated with the amount of improvement or decline that leaders experience in their transformational leadership behavior. These findings extend both our understanding of the effects of leadership development interventions, and the processes underlying change in leader behavior. By continuing to investigate the nature of the relationship between psychological changes and change in transformational leadership behavior we should be able to design leadership development interventions that are more effective in supporting leaders' development.

References

Amit, K., Popper, M., Gal, R., Mamane-Levy, T. and Lisak, A. (2009), "Leadership-shaping experiences: a comparative study of leaders and non-leaders", *Leadership and Organization Development Journal*, Vol. 30 No. 4, pp. 302-318.

Atwater, L.E. and Brett, J.F. (2003), "Antecedents and consequences of reactions to developmental 360 feedback", *Journal of Vocational Behavior*, Vol. 66 No. 3, pp. 532-548.

Atwater, L.E., Roush, P. and Fischthal, A. (1995), "The influence of upward feedback on self- and follower ratings of leadership", *Personnel Psychology*, Vol. 48 No. 12, pp. 35-59.

Atwater, L.E., Dionne, S.D., Avolio, B., Camobreco, J.F. and Lau, A.W. (1999), "A longitudinal study of the leadership development process: individual differences predicting leader effectiveness", *Human Relations*, Vol. 52 No. 1, pp. 1543-1562.

Avolio, B.J. (1994), "The 'Natural': some antecedents to transformational leadership", *International Journal of Public Administration*, Vol. 17 No. 9, pp. 1559-1581.

Avolio, B.J. and Hannah, S.T. (2008), "Developmental readiness: accelerating leader development", *Consulting Psychology Journal: Practice and Research*, Vol. 60 No. 4, pp. 331-347.

Bandura, A. (1982), "The assessment and predictive generality of self-percepts of efficacy", *Journal of Behavioral Therapy and Experimental Psychiatry*, Vol. 13 No. 3, pp. 195-199.

Bandura, A. (1986), *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice Hall, Englewood Cliffs, NJ.

Bandura, A. (1997), *Self-Efficacy: The Exercise of Control*, Freeman, New York, NY.

Bandura, A. (2001), "Social cognitive theory: an agentic perspective", *Annual Review of Psychology*, Vol. 52 No. 1, pp. 1-26.

Barling, J., Weber, T. and Kelloway, E.K. (1996), "Effects of transformational leadership training on attitudinal and financial outcomes: a field experiment", *Journal of Applied Psychology*, Vol. 81 No. 6, pp. 827-832.

Baron, L. and Morin, L. (2010), "The impact of executive coaching on self-efficacy related to management soft-skills", *Leadership and Organization Development Journal*, Vol. 31 No. 1, pp. 18-38.

Bass, B.M. (1985), *Leadership and Performance Beyond Expectations*, Free Press, New York, NY.

Bommer, W.H., Rubin, R.S. and Baldwin, T.T. (2004), "Setting the stage for effective leadership: antecedents of transformational leadership behavior", *The Leadership Quarterly*, Vol. 15 No. 2, pp. 195-210.

Bono, J.E. and Judge, T.A. (2003), "Self-concordance at work: toward understanding the motivational effects of transformational leaders", *Academy of Management Journal*, Vol. 46 No. 5, pp. 554-571.

Bono, J.E. and Judge, T.A. (2004), "Personality and transformational and transactional leadership: a meta-analysis", *Journal of Applied Psychology*, Vol. 89 No. 5, pp. 901-910.

Boyatzis, R.E. and Akrivou, K. (2006), "The ideal self as the driver of intentional change", *Journal of Management Development*, Vol. 25 No. 7, pp. 624-642.

Burke, M.J. and Day, R.R. (1986), "A cumulative study of the effectiveness of managerial training", *Journal of Applied Psychology*, Vol. 71 No. 2, pp. 232-245.

Cohen, J. (1988), *Statistical Power Analyses for the Behavioral Sciences*, 2nd ed., Academic Press, New York, NY.

Cronbach, L.J. and Furby, L. (1970), "How we should measure 'change': or should we?", *Psychological Bulletin*, Vol. 74, pp. 68-80.

Day, D.V. (2000), "Leadership development: a review in context", *Leadership Quarterly*, Vol. 11 No. 4, pp. 581-613.

Deal, J.J. and Billings, R.S. (1996), "Efficacy and outcome expectancies in a group context: on the usefulness and validity of the group-level construct", paper presented at the 11th Annual Conference of the Society for Industrial and Organizational Psychology, San Diego, CA.

Dvir, T., Eden, D., Avolio, B.J. and Shamir, B. (2002), "Impact of transformational leadership on follower development and performance: a field experiment", *Academy of Management Journal*, Vol. 445 No. 4, pp. 735-744.

Eid, J., Johnsen, B.H., Bartone, P.T. and Nissestad, O.A. (2008), "Growing transformational leaders: exploring the role of personality hardiness", *Leadership and Organization Development Journal*, Vol. 29 No. 1, pp. 4-23.

Finn, F.A., Mason, C.M. and Bradley, L.M. (2007), "Doing well with executive coaching: psychological and behavioral impacts", *Academy of Management Conference*, Philadelphia, PA.

Fredrickson, B.L. (1998), "What good are positive emotions?", *Review of General Psychology*, Vol. 2 No. 3, pp. 300-319.

Fredrickson, B.L. (2004), "The broaden-and-build theory of positive emotions", *Philos Trans R Soc Lond B Biol Sci*, Vol. 359 No. 1449, pp. 1367-1378.

Frese, M., Beimel, S. and Schoenborn, S. (2003), "Action training for charismatic leadership: two evaluations of studies of a commercial training module on inspirational communication of a vision", *Personnel Psychology*, Vol. 56 No. 3, pp. 671-697.

Galper, R.E. (1976), "Turning observers into actors: differential causal attributions as a function of 'empathy'", *Journal of Research in Personality*, Vol. 10 No. 3, pp. 328-335.

Gomez, D. (2007), "The leader as learner", *International Journal of Leadership Studies*, Vol. 2 No. 3, pp. 280-284.

Gregory, B.T., Moates, N.K. and Gregory, S.T. (2011), "An exploration of perspective taking as an antecedent of transformational leadership behavior", *Leadership and Organization Development Journal*, Vol. 32 No. 8, pp. 807-816.

Griffin, M.A. (2001), "Dispositions and work reactions: a multilevel approach", *Journal of Applied Psychology*, Vol. 86 No. 6, pp. 1142-1151.

Hannah, S.T., Avolio, B.J., Luthans, F. and Harms, P.D. (2008), "Leadership efficacy: review and future directions", *The Leadership Quarterly*, Vol. 19 No. 6, pp. 669-692.

Harris, M.M. and Schaubroeck, J. (1998), "A meta-analysis of self-supervisor, self-peer, and peer-supervisor ratings", *Personnel Psychology*, Vol. 41 No. 1, pp. 43-62.

Hart, P.M., Griffin, M.A., Wearing, A.J. and Cooper, C.L. (1996), *QPASS: Manual for the Queensland Public Agency Staff Survey*, Public Sector Management Commission, Brisbane.

Hazucha, J.F., Hezlett, S.A. and Schneider, R.J. (1993), "The impact of 360-degree feedback on management skills development", *Human Resource Management*, Vol. 32 No. 2, pp. 325-351.

Hotho, S. and Dowling, M. (2010), "Revisiting leadership development: the participant perspective", *Leadership and Organization Development Journal*, Vol. 31 No. 7, pp. 601-629.

House, R.J. (1998), "Appendix: measures and assessments for the charismatic leadership approach: scales, latent constructs, loadings, Cronbach alphas, interclass correlations", in Dansereau, F. and Yammarino, F.J. (Eds), *Leadership: The Multiple Level Approaches Contemporary and Alternative*, Part B, JAI Press, London, pp. 23-30.

Howell, J.M. and Avolio, B.J. (1993), "Transformational leadership, transactional leadership, locus of control, and support for innovation: key predictors of consolidated-business-unit performance", *Journal of Applied Psychology*, Vol. 78 No. 6, pp. 891-902.

James, L.R. (1982), "Aggregation bias in estimates of perceptual agreement", *Journal of Applied Psychology*, Vol. 67 No. 2, pp. 219-229.

James, L.R., Demaree, R.G. and Wolf, G. (1984), "Estimating within-group interrater reliability with and without response bias", *Journal of Applied Psychology*, Vol. 69 No. 1, pp. 85-98.

Judge, T.A., Bono, J.E., Ilies, R. and Gerhardt, M.W. (2002), "Personality and leadership: a qualitative and quantitative review", *Journal of Applied Psychology*, Vol. 87 No. 4, pp. 765-780.

Judge, T.A., Woolf, E.F., Hurst, C. and Livingston, B. (2006), "Charismatic and transformational leadership", *Zeitschrift Fur Arbeits-u Organisationspsychologie*, Vol. 50 No. 4, pp. 203-214.

Kelloway, E.K., Barling, J. and Helleur, J. (2000), "Enhancing transformational leadership: the roles of training and feedback", *Leadership and Organization Development Journal*, Vol. 21 No. 3, pp. 145-149.

Kluger, A.N. and DeNisi, A. (1996), "The effects of feedback interventions on performance: a historical review, a meta-analysis, and a preliminary feedback intervention theory", *Psychological Bulletin*, Vol. 119 No. 2, pp. 254-284.

Kuhnert, K.W. and Lewis, P. (1987), "Transactional and transformational leadership: a constructive/developmental analysis", *Academy of Management Review*, Vol. 12 No. 4, pp. 648-657.

Lent, R.W., Brown, S.D. and Larkin, K.C. (1987), "Comparison of three theoretically derived variables in predicting career and academic behavior: self-efficacy, interest congruence, and consequence thinking", *Journal of Counseling Psychology*, Vol. 34 No. 3, pp. 293-298.

Li, C.-K. and Hung, C.-H. (2009), "The influence of transformational leadership on workplace relationships and job performance", *Social Behavior and Personality*, Vol. 37 No. 8, pp. 1129-1142.

London, M. and Smither, J.W. (1995), "Can multi-source feedback change perceptions of goal accomplishment, self-evaluations, and performance-related outcomes? Theory-based applications and directions for research", *Personnel Psychology*, Vol. 48 No. 4, pp. 803-839.

McCormick, M.J., Tanguma, J. and Lopez-Forment, A.S. (2002), "Extending self-efficacy theory to leadership: a review and empirical test", *Journal of Leadership Education*, Vol. 1 No. 2, pp. 34-49.

Mandell, B. and Pherwani, S. (2003), "The relationship between emotional intelligence and transformational leadership style: a gender comparison", *Journal of Business and Psychology*, Vol. 17 No. 3, pp. 387-404.

Monninghoff, M. (2008), "Effects of transformational leadership training and coaching on follower perception of transformational leadership, commitment and organizational citizenship behavior", *International Journal of Psychology*, Vol. 43, pp. 574-575.

Mullen, J.E. and Kelloway, K.E. (2009), "Safety leadership: a longitudinal study of the effects of transformational leadership on safety outcomes", *Journal of Occupational and Organizational Psychology*, Vol. 82 No. 2, pp. 253-272.

Ostroff, C. and Schmitt, N. (1983), "Configurations of organizational effectiveness and efficiency", *Academy of Management Journal*, Vol. 36 No. 6, pp. 1345-1361.

Parker, S.K. and Axtell, C.M. (2001), "Seeing another viewpoint: antecedents and outcomes of employee perspective taking", *Academy of Management Journal*, Vol. 44 No. 6, pp. 1085-1100.

Piccolo, R.F. and Colquitt, J.A. (2006), "Transformational leadership and job behaviors: the mediating role of core job characteristics", *Academy of Management Journal*, Vol. 49 No. 2, pp. 327-340.

Podsakoff, P.M., MacKenzie, S.B. and Bommer, W.H. (1996), "Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors", *Journal of Management*, Vol. 22 No. 2, pp. 259-298.

Podsakoff, P.M., MacKenzie, S.B., Moorman, R.H. and Fetter, R. (1990), "Transformational leader behaviors and their effects on followers' trust in leader, satisfaction and organizational citizenship behaviors", *Leadership Quarterly*, Vol. 1 No. 2, pp. 107-142.

Purvanova, R.K., Bono, J.E. and Dzieweczynski, J. (2006), "Transformational leadership, job characteristics, and organizational citizenship", *Human Performance*, Vol. 19 No. 1, pp. 1-22.

Regan, D.T. and Totten, J. (1975), "Empathy and attribution: turning actors into observers", *Journal of Personality and Social Psychology*, Vol. 32, pp. 850-856.

Richardson, H.A. and Vandenberg, R.J. (2005), "Integrating managerial perceptions and transformational leadership into a work-unit level model of employee involvement", *Journal of Organizational Behavior*, Vol. 26 No. 5, pp. 561-589.

Schaub, M. and Tokar, D.M. (2005), "The role of personality and learning experiences in Social Cognitive Career Theory", *Journal of Vocational Behavior*, Vol. 66 No. 2, pp. 304-325.

Schaubroeck, J., Lam, S.S.K. and Cha, S.E. (2007), "Embracing transformational leadership: team values and the impact of leader behavior on team performance", *Journal of Applied Psychology*, Vol. 92 No. 4, pp. 1020-1030.

Schneider, B., White, S.S. and Paul, M.C. (1998), "Linking service climate and customer perceptions of service quality: test of a causal model", *Journal of Applied Psychology*, Vol. 83 No. 2, pp. 150-163.

Smither, J.W., London, M. and Richmond, K.R. (2005), "The relationship between leaders' personality and their reactions to and use of multisource feedback", *Group and Organization Management*, Vol. 30 No. 2, pp. 181-210.

Sosik, J.J. (2006), *Leading with Character: Stories of Valor and Virtue and the Principles they Teach*, Information Age Publishing, Greenwich, CT.

Sosik, J.J., Jung, D. and Dinger, S.L. (2009), "Values in authentic action: examining the roots and rewards of altruistic leadership", *Group and Organization Management*, Vol. 34 No. 4, pp. 395-431.

Spreitzer, G.M. and Quinn, R.E. (1996), "Empowering middle managers to be transformational leaders", *The Journal of Applied Behavioral Science*, Vol. 32 No. 3, pp. 237-261.

Towler, A.J. (2003), "Effects of charismatic influence training on attitudes, behavior, and performance", *Personnel Psychology*, Vol. 56 No. 2, pp. 363-381.

Tracey, J.B. and Hinkin, T.R. (1998), "Transformational leadership or effective managerial practices?", *Group and Organization Management*, Vol. 23 No. 3, pp. 220-236.

van Emmerik, H., Gardner, W.L., Wendt, H. and Fischer, D. (2010), "Associations of culture and personality with McClelland's motives: a cross-cultural study of managers in 24 countries", *Group and Organization Management*, Vol. 35 No. 3, pp. 329-367.

Yammarino, F.J. and Dubinsky, A.J. (1994), "Transformational leadership theory: using levels of analysis to determine boundary conditions", *Personnel Psychology*, Vol. 47 No. 4, pp. 787-811.

Yukl, G.A. and Kim, H. (1998), "Limitations in the managerial practices questionnaire and the leadership study", in Dansereau, F. and Yammarino, F.J. (Eds), *Leadership: The Multiple-Level Approaches*, Jai Press, Stamford, CT.

Zhu, W., Avolio, B.J. and Walumbwa, F.O. (2009), "Moderating role of follower characteristics with transformational leadership and follower work engagement", *Group and Organization Management*, Vol. 34 No. 5, pp. 590-619.

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